REMARKS

Applicants have carefully considered the arguments advanced by the Examiner in continuing the restriction requirement in this application and respectfully request reconsideration and withdrawal of the restriction requirement in view of the above amendments to the claims to more particularly point out and distinctly claim the invention to place them in better form to more clearly present a single invention for examination. No new matter is added and no additional issues are presented by way of the amendments.

Applicants note the Examiner has indicated claims 44 and 47-50 recite allowable subject matter but are objected to as being dependent on a rejected claim base.

Applicants have carefully reviewed the cited references and considered the arguments advanced by the Examiner in rejecting the claims under 35 U.S.C. § 103 and respectfully request withdrawal of the rejections for the following cogent reasons.

The Examiner alleges that the process of manufacture claims 1-10 and 21-30 of Group I are independent and distinct from the apparatus claims 11-30 of Group II because the apparatus claims invoke 35 USC § 112(6). Independent claims 1 and 21 recite the step of applying an organic binder to the indium tin oxide (ITO) surface of the ITO/PET film by means of a roller. Independent apparatus claim 11 recites a first roller for applying an organic binder to the indium

tin oxide (ITO) surface of the ITO/PET film. The method as claimed is specifically designed for practice on the apparatus as claimed such that the new method claim 55 specifically calls for the provision of the apparatus of claim 11. It is respectfully submitted that Groups I and II do not describe independent and distinct inventions.

With regard to Group I and the product claims 40-50 of Group III, the Examiner alleges the indium tin oxide coated polyester (ITO/PET) film is distinct from the indium tin oxide coated polyester (ITO/PET) film of independent claims 1 and 21 of Group I. The Examiner asserts the indium tin oxide coated polyester (ITO/PET) film recited in independent claims 1 and 21 of Group I and indpendent claim 11 of Group II and independent claim 40 of Group III can be a "PET matrix with an ITO dopant or with intermixed, non-laminated layers of ITO and PET". Applicants respectfully disagree that the Examiner's example shows the product claims of Group III are independent and distinct from the apparatus claims of Group II such that the alledged separate inventions are restrictable. The term "indium tin oxide coated polyester (ITO/PTE) film" as disclosed and claimed is a common industrial name for a transparent indium tin oxide vapor deposited thin film coating (usually sputtered) on a continuous coil on transparent polyester film. Applicants enclose as Attachment 1 a printout from the internet site of the Plastic Film Company, Ltd. The product as claimed is specifically designed for manufacture with the apparatus as claimed such that the new product claim 54 specifically calls for the provision of the apparatus of claim 11.

With regard to Groups I and III, the Group I method as claimed is specifically designed for manufacture of the product as claimed such that the new product claim 53 specifically calls for the provision of the method of claim 1.

In addition, all claims in the application are intimately interrelated and they should be examined together for reasons of efficiency and to avoid a later charge of double patenting. Furthermore, it is believed that the examination of all the claims together would not place a serious burden on the Examiner. MPEP § 803.

Claim Rejection 35 U.S.C. §112, second paragraph

Claim 47 is indicated to be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. §112 set forth in the Office Action. Applicants respectfully request withdrawal of the rejection in view of the amendment to claim 47 submitted in Paper No. 6 in response to the Office Action Paper No. 5 originally rejecting claim 47 under 35 U.S.C. §112, second paragraph.

Claim Rejections 35 U.S.C. §103(a)

Turning now to the rejections under 35 U.S.C. §103(a), claims 40 and 41 have been rejected as being obvious in view of Kardon (U.S. Patent No. 4,560,902) when combined with Appelberg (U.S. Patent No. 5,045,755) in view of Kawachi (U.S. Patent No. 4,767,679) and further in view of Mori et al. (U.S. Patent No. 4,956,031). To reject claims 42, 43, 45 and 46, the teachings of Kobayashi et al. U.S. Patent 5,229,628) are added to the Kardon-Appleberg-Kawachi-Mori combination on the grounds of obviousness.

Kardon discloses a very distinct chemistry and method for making individual discreet EL lamps in which the same resin chemistry is used for both the phosphor layer on an ITO coated front PET substrate and the rear barium titanate layer on aluminum foil rear substrate which are then laminated together into discreet lamps in a stationary heated press. The phosphor and barium titanate layers are coatings made from slurries of the materials mixed with solvents, with precise descriptions of the preferred adhesives and solvents to be used. Kardon claims that the resulting structure, being of like materials, becomes one unitary layer with improved adhesion and dielectric and contamination resistant properties.

Kardon does not disclose, teach or suggest a large-scale EL lamp and as such does not disclose any provisions for making large or continuous coil EL lamps as disclosed and claimed in Applicants' invention. Kardon further does not disclose how to leave ITO exposed for making connections for large or small lamps and fails to teach, suggest or disclose what those connections are for his parallel plate construction. Kardon only discloses (column 5, lines 18 – 20) "Electrical connections are then attached to the individual electrodes and these are connected

to a source of alternating current." Kardon's patent discloses and claims the epoxy and urethane chemistries he has devised as adhesive binder layers. Thus, Kardon is deficient with respect to the limitations found in sub-paragraphs (a) and (b) of claim 40 of the present invention because Kardon does not disclose, teach or suggest a front electrode laminate or a rear electrode laminate as defined in claim 40.

Appelberg discloses an EL lamp and processing method which are very distinct from that of Kardon. Appelberg describes an EL lamp construction of continuously depositing an organic UV curable binder alone on the ITO coating of a PET front substrate, and in the same operation downstream from this coating, continuously depositing a mono-layer of phosphor particles on the wet binder and then curing before rewinding this coil. Subsequent operations then put down a second coat of UV-curable material over the exposed phosphor particles and cure, and then deposit a layer of vapor deposited aluminum over this second coating. Appelberg does not disclose teach or suggest a large-scale EL lamp construction as disclosed in Applicants' invention.

Applicants respectfully disagree with the Examiner's assertion that it would be obvious to incorporate Appelberg's mono-layer of phosphor into Kardon's construction. First, neither Kardon nor Appelberg disclose an intent to make large-scale EL lamps as disclosed and claimed in Applicants' application. The intent to make large-scale EL lamps needs to be built into the design of the lamp construction and the processes and apparatus utilized. Applicants submit that without intent to make large scale EL lamps, one skilled in the art would not be led to modify Kardon's construction because the scope of changes to Kardon's construction would be so great, if possible at all, that it would be deemed uneconomical for what would amount in a net loss in performance. Secondly, Appelberg does not disclose, teach or suggest a rear electrode laminate comprising a continuous coil of an aluminum polyester film and a barium titanate layer on the aluminum surface of the aluminum foil polyester film. Thus, Appelberg is deficient with respect

to the limitations found in sub-paragraphs (b) and (c) of claim 40 of the present invention. Further, Applicants submit one cannot actually modify Kardon's construction using the mono-layer of phosphor construction from Appelberg for at least the following reasons.

Appelberg discloses a continuous deposition process to put down a mono-layer of phosphor on a continuous film of organic binder coated ITO/PET. Applicants submit there is NO non-continuous process that will produce an equivalent deposition to this process. Thus Kardon would need to utilize a continuous process for processing his front electrode. This would include a continuous coating process for the first organic adhesive layer and a continuous curing/drying method for the first adhesive layer after the phosphor deposition. Kardon does not teach, disclose or suggest such a continuous process.

Kardon's organic adhesive layer cannot be used in the Appelberg disclosed continuous process because the organic adhesive layer is incompatible with Appelberg's process. Appelberg discloses a UV curable organic layer which is coated wet at 100% solids onto the ITO surface of the ITO coated PET. The mono-layer of phosphor is deposited onto the wet coat before curing. Kardon's chemistry for both his coatings is mixed in a slurry with solvent and reacted and dried (Column 5, lines 52, 59) and results in his phosphor and barium titanate layers being dry before lamination in his process. This is incompatible, however, with Appelberg's continuous coating of 100% solids wet organic binder because Kardon's chemistry is only wet in a solvent system. Many solvents, including those listed by Kardon, are highly flammable and strictly forbidden from being used in an electrostatic deposition system with high voltages and the high possibility of arcing and resulting fire. Therefore, one could not deposit a mono-layer of phosphor onto a wet layer of Kardon's disclosed organic binder mixed with solvent. If, however, one tried to put down a wet layer of Kardon's chemistry and remove the solvents by drying before entering the electrostatic chamber, the organic layer would be dry as disclosed by Kardon and the phosphor particles would not attach themselves, falling away immediately.

Thus, one could not modify nor would one be motivated to modify Kardon's EL lamp construction to incorporate Appelberg's mono-layer of phosphor.

If one substituted Appelberg's UV-curable organic coating for depositing a mono-layer of phosphor to utilize Kardon's construction as suggested by the Examiner, he would then need to continuously deposit a second organic coating on the phosphor particles as a third process step as disclosed by Appelberg. He would then need to cut up this continuous coil of front substrate into pieces for subsequent lamination in a stationary press as taught by Kardon. He could then process the rear electrode with barium titanate coated on foil as discreet pieces as disclosed Kardon and he would try to laminate the front and rear electrodes as taught by Kardon. If all these new steps are carried out, when he is finished, individual EL lamps cannot be made from the resultant laminate because the ITO electrode is covered over and connection to the ITO cannot be made.

Furthermore, using the main tenet of Kardon of having like phosphor and barium titanate organic chemistries welding together to form a unitary layer, the barium titanate layer would also need to utilize Appelberg's UV-curable organic binder. As a 100% solids material, it would be extremely difficult to disperse the barium titanate powder into this organic binder, particularly using the loading that Kardon disclosed of greater than 70 – 90% by weight (column 3, lines 22-26). Also, it would be impossible to coat this highly filled 100% solids barium titanate binder coating using the barium titanate process disclosed in the Applicants' application due to the 100% solids and very high viscosity characteristics. In fact, it would be very difficult, if not impossible, to coat this 100% solids barium titanate binder coating using any coating process.

In addition, if a rear barium titanate layer utilizing Appelberg's UV-curable organic layer were possible to mix, and ~~once~~ coat~~ed~~ and then cured on the foil rear substrate, it would not laminate with the a front substrate which also utilizes Appelberg's UV curable organic binder

because both layers are by definition cured and therefore cross-linked. They will exhibit no thermoplastic properties and would not laminate, resulting in a failed construction.

More importantly, if either construction (Kardon-Appelberg, Appelberg-Kardon) listed above were even possible, the ITO front electrode cannot be accessed and one has created an EL lamp of poorer performance than either Appelberg's or Kardon's construction because of the extra layer in the lamp. Appelberg has two organic layers, one on each side of the phosphor, plus the rear electrode. The resulting Kardon-Appelberg, Appelberg-Kardon combination if such a combination could be made would have these two organic layers plus the barium titanate layer and the rear electrode thereby providing a very dim lamp if one could be made to operate.

All these layers would need to be there in keeping with the teachings of Kardon in having like phosphor and barium titanate organic chemistries welding together to form a unitary layer. In addition, the only viable attempted construction is to use Appelberg's UV curable chemistry for the front electrode to be able to deposit a mono-layer of phosphor and Kardon's chemistry for the barium titanate for the rear electrode. The resulting construction is problematic. Kardon does not teach, suggest or disclose continuous coating or drying of the barium titanate rear substrate. Also, the resulting lamination of these two unlike materials is at best difficult, and violates the basic tenet of Kardon's construction of having like front and rear chemistries being laminated and forming a unitary layer. In fact, the bond between these two layers will be very poor or non-existent, because the thermoplastic barium titanate rear layer was designed to fuse to a like thermoplastic material front phosphor layer under heat and pressure and will have little or no adhesion to a cross-linked non-thermoplastic UV-cured front phosphor layer. This will result in a failed and inoperative EL lamp construction.

Applicants submit one would not be motivated to remove the middle organic layer because the two substrates would bond together very poorly or not at all because of the exposed

layer of phosphor particles. This would be true if one used Kardon's disclosed stationary press lamination method or a continuous lamination method which Kardon does not teach, suggest or disclose and which his chemistry may not be suitable for. The chemistry is likely not suitable for continuous lamination because the organic adhesive materials disclosed by Kardon generally need longer dwell times under pressure than is possible in a heated nip laminator.

In addition, the removal of the middle layer would again violate the basic tenet of the Kardon construction of developing a unitary layer and it would lead to a lamp of poor performance and poor durability. This would be the case because of the resulting poor lamination, the interface of the two substrates (barium titanate coating/phosphor mono-layer) would be porous with many trapped air cells. This would result in both poor lamp brightness and poor moisture and contamination resistance. It would also lead to an EL lamp construction which would tend to delaminate and fall apart.

In contrast, Applicants' invention discloses and claims a novel method for removing the middle organic layer and with subsequent continuous lamination to a barium titanate coated aluminum foil/PET laminate creating an EL lamp structure that has good lamp performance and NO porosity at the interface of the two coatings. Applicants' invention as disclosed and claimed partially cures the first organic layer which is slightly thicker that of Appelberg after the phosphor mono-layer is deposited and then to calender the phosphor layer to push it into the first organic layer so that only the tops of the phosphor particles are exposed and then followed by a second full curing step of the first organic layer, which is all done in one pass. Applicants now have a front substrate which is ready for laminating to the barium titanate coated aluminum foil rear substrate that can only be done in a continuous lamination process. That is because as the substrates are continuously laminated in a heated nip of two cylinders, the heated barium titanate layer flows around the tops of the phosphor particles making a complete air-free bond at the interface where the air is pushed out continuously ahead of the point of lamination.

Neither the Kardon nor Appelberg references taken alone or in combination if such a combination can be made, disclose the intent to make large scale EL lamps nor the possibility of making an EL lamp as disclosed and claimed in Applicants' application. The resulting construction of merging the two distinct lamp processes of Kardon and Appelberg into one construction, if at all possible, is more costly, requires extensive modification of the Kardon's processes, and produces a lamp with poorer performance than each of the original constructions and certainly poorer than Applicants' invention. Further, the resulting lamp if one could be constructed as asserted by the Examiner would violate the basic tenet of Kardon's patent of like chemistries bonding together to form a unitary layer.

Accordingly, Applicants submit as discussed above that one of ordinary skill in the art would not have inferred modifying Kardon's EL lamp to incorporate a mono-layer of phosphor as taught by Appelberg for at least the following reasons:

1. One would need to develop a continuous adhesive coating, curing and phosphor deposition processes for the front substrate to incorporate the mono-layer of phosphor;

2. Kardon's chemistry is incompatible with this process as disclosed by Appelberg, thus could not be used for the front substrate;

3. If Appelberg's chemistry is used for the front substrate, the resulting construction would have three distinct organic layers, which would reduce lamp brightness and have very little or no bond;

4. If Appelberg's chemistry is used for the front substrate and the second organic layer is left out, that results in a poor or non-existent bond between the barium titanate layer and the phosphor layer due to the exposed phosphor powder layer and results in poor performance and poor durability.

5. One could not fabricate the resulting laminated constructions into EL lamps because the ITO has been completely buried and connections could not be made to the ITO to power the

lamps.

Therefore, Applicants submit that the scope of the needed changes are so great and the resulting performance is so poor that it would not be considered or attempted. Also, any resulting lamps would not be equivalent in function or performance to the EL lamp as disclosed and claimed in Applicants' application.

Applicants submit that the Examiner has failed to establish a prima facie case of obviousness because there is no suggestion or motivation to modify Kardon or Appelberg or to combine the reference teachings; there is no reasonable expectation of success and the references taken alone or combined do not teach or suggest all the claim limitations.

Applicants submit that claims 40 and 41 are patentably and technically distinguishable over the Kardon-Appelberg combination for at least the reason that the front electrode laminate and the rear electrode laminate are continuously joined with the organic binder phosphor particulate layer facing the barium titanate layer to form a continuous roll of EL lamp laminate material having an ITO front electrode and an aluminum foil rear electrode. Thus Kardon and Appelberg taken singly or in combination are deficient with respect to at least the limitations found in sub-paragraphs (a), (b) and (c) of claim 40 of the present application.

Kardon-Appelberg-Mori

In attempting to correct the deficiencies of the Kardon-Appelberg combination, the Examiner alleges it would be obvious to combine the teachings of Mori et al. to provide Kardon with a continuous coil of either the front or rear electrodes or of a laminate of the two. Mori discloses an elongated EL lamp and manufacturing method for a laminated structure with an aluminum foil rear substrate with a barium titanate layer on it and a phosphor layer on top of the

barium titanate layer, a front transparent substrate with a transparent electrode such as ITO and an auxiliary narrow ribbon electrode, in which all three are co-laminated together somewhat continuously under heat and pressure. Mori doe not disclose how the barium titanate and phosphor layers are coated or the chemistries involved. During lamination, the phosphor bearing layer bonds directly to the ITO surface everywhere except where the auxiliary ribbon electrode in co-laminated into the laminate. The auxiliary ribbon electrode has conductive adhesive on the side in contact with ITO surface and is said to bond to it. The other side of the auxiliary ribbon electrode has a PET insulator which is the side facing the phosphor-bearing layer. Mori does not disclose whether or not the phosphor-bearing layer bonds to the PET insulator.

Applicants respectfully disagree with the Examiner that it would have been obvious to one of ordinary skill in the art to modify Kardon's EL lamp to be formed of continuous coils of rear and front electrodes and their final laminate in order to form an elongated EL element capable of low cost and ease of manufacture as taught by Mori, in view of Appelberg's mono-layer of phosphor. The resulting lamp material fabricated by the Mori process for elongated EL lamps is not equivalent to the EL lamp material of the invention as disclosed and claimed in applicants' application. Applicants' invention as disclosed and claimed provides a web-to-web processing from coating to laminating to rewinding the finished coil of EL lamp material. The coils can be typically 1200 feet –2400 feet long in length and 32.5 inches wide in width with wider widths and lengths possible as materials improve. Applicants' EL lamp material can be made before customer orders with specific lamp sizes are received, because the lamps can be fabricated after the coil is fabricated. In applicants' invention, mixed lamp sizes and lengths can be cut from each coil using proper planning that lets one approach 100% utilization of the EL material.

In contrast, Mori must wait until he has a specific lamp width and create coils of the front and rear substrates and auxiliary substrate specifically for that width lamp. Due to the set-up

costs for a continuous lamination process, it is not cost effective to utilize a lamination process for small to moderate production orders. It is only cost effective for larger production orders or when many small orders with mixed sizes can be run together at high yield. Mori, however, cannot mix different size lamps together in a single run at high yield which means he cannot make standard width front and rear substrates which when laminated together creates a standard width lamp material in which he could cut out different width lamps since this is impossible to do with Mori's construction. Any attempt to cut out different width lamps would be very wasteful and costly, because each lamp cut out would need to have the auxiliary electrode in it. The balance of the laminate that is trimmed away is scrap and cannot be used to fabricate other lamps. For example, if Mori fabricated 12.5'' wide lamp material as a standard width, it would be useful for making approximately 11" -12" wide lamps. If Mori wanted to make 3" wide lamps from this material, he would need trim 9" off the width on the side away from the auxiliary electrode and discard it as scrap because it is un-useable as lamp material. Such use would be very costly due to the high costs of EL materials and it would be contrary to one of the basic tenets of Mori's disclosure to achieve manufacturing at low cost.

Mori does not teach, disclose or suggest a continuous rewind because he cannot utilize one. Mori cannot make continuous finished coils of EL lamp material. In fact Mori must know in advance how long a lamp he is making is and must stop the lamination process at the end of each lamp, open the nip, cut and remove the laminated lamp leaving a length of the auxiliary electrode protruding beyond the laminated lamp. Then he must restart the lamination for the next lamp length. This is very inefficient and leads to excessive scrap because it is very difficult to start/stop a lamination process without generating substandard quality laminations at the beginning of each re-start.

Furthermore, in contrast to applicants' invention, Mori must deal with possible mis-alignment of the auxiliary ribbon electrode that is co-laminated with the front and rear substrate.

In fact, although Mori does not disclose it, good engineering practice would require allowance for a dimensional tolerance for the placement of this electrode during co-lamination. This would mean the resulting laminated lamp material must be larger than the finished lamp width, from which the finished lamp width would be cut out with the remainder becoming scrap, again leading to higher cost.

A further deficiency is present in Mori that is not present in applicants' invention. The lamination of the rear substrate to the front substrate in Mori, which occurs at the interface of phosphor bearing layer of the rear substrate and the ITO surface of the front substrate creates a further problem because it is very difficult to achieve a continuous, good quality lamination at this interface. If one with ordinary skill in the art tries to construct a lamp as taught by Kardon in view of Appelberg and in further view of Mori, he will have an inoperative EL lamp construction, which will NOT function at all. The reason is he would need to the coat barium titanate layer onto the foil substrate, and then deposit a thin organic layer, a mono-layer of phosphor on top of the organic layer, and a second organic layer to utilize the Kardon-Appelberg combination construction. Applicants have above shown that Kardon's thermoplastic chemistry is incompatible with Appelberg's process and could not be used. If, however, one used Appelberg's chemistry, he would then need to laminate that rear substrate with the Mori barium titanate layer and Appelberg's two UV-cured organic binder layers encapsulating a mono-layer of phosphor to the ITO surface of a front substrate of ITO coated PET and co-laminate an auxiliary ribbon electrode between the other two substrates. This construction fails for several reasons as follows.

First, applicants have shown above that one cannot use Kardon's chemistry to achieve a mono-layer of phosphor on the ITO surface of the ITO/PET front substrate. At best, one must use the Appelberg UV-curable organic binder. However, one cannot deposit a mono-layer of phosphor, as disclosed by Appelberg, onto an organic layer deposited onto a barium titanate

coated foil substrate. The reason is that Appelberg discloses an electrostatic process for depositing a mono-layer of phosphor onto a THIN layer of organic binder on the ITO surface of an ITO coated PET substrate. The electrostatic process works by continuously grounding the ITO coating and depositing charged phosphor particles which are attracted to the grounded substrate, attach themselves to the wet organic binder layer and release their charge after a short time delay through the thin wet organic layer to the grounded ITO layer. The time delay prevents any other charged particle from being deposited in exactly the same spot because the like charges will repel it and cause the charged particle to locate a spot where there is no phosphor particle. As the phosphor particles gradually lose their charge, they allow other phosphor particles to be deposited next to them, but not on top of them. By the time the phosphor particles completely lose their charge, they are no longer in the phosphor deposition chamber because of the continuously moving substrate, thus achieving a mono-layer. In attempting the same process with a highly insulating layer of barium titanate underneath the organic layer, once the first phosphor particles attach themselves to the organic coating, they will not lose their electrostatic charge. This will result in a phosphor layer that will have fewer phosphor particles than the mono-layer disclosed by Appelberg because the like charges will repel other phosphor particles to further distances from each other. In fact, the whole deposition process will be greatly diminished as the entire surface of the substrate begins to build a charge, discouraging any more phosphor particles from even approaching the substrate. The result will be a very poorly distributed phosphor layer that does not approximate a mono-layer.

Secondly, when one coats the second UV-curable organic layer over the poorly distributed phosphor layer and cures it as disclosed by Appelberg, the resulting surface of the rear substrate will have a UV cured coating which is cross-linked and not thermoplastic. In attempting to co-laminate this substrate to the ITO surface of the ITO coated PET front substrate and the auxiliary ribbon electrode, the result will be no adhesion between the front and rear substrates and thus a failed construction.

Thirdly, if one does not coat the second UV-curable organic layer as taught by Appelberg, the results are no better. When one takes this resulting rear substrate with the poorly distributed phosphor deposited on a thin organic coating layer on a barium coating on foil and tries to co-laminate to the ITO surface of a front ITO coated PET substrate and the auxiliary ribbon electrode, the result will again be no adhesion between the front and rear substrates because the surface of the rear substrate is a dry powder, also resulting in a failed construction.

If one completely ignores Appelberg's construction and tries to fabricate a lamp modifying Kardon's construction in view of Mori, ~~another~~ several problems result~~s~~. In one construction, if one uses Kardon's chemistry in Mori's construction, one would continuously coat barium titanate onto the aluminum rear electrode and then coat a phosphor-bearing layer on top of the barium titanate coating. This rear substrate would then be co-laminated to the ITO surface of a front ITO coated PET substrate and the auxiliary ribbon electrode. The problem is, it is very difficult to achieve a smooth phosphor coating on the barium titanate coated aluminum foil substrate due to the relatively large phosphor particle size (compared to the generally disclosed phosphor layer thickness) and the generally high loading of phosphor particles that normally characterizes this layer. It is noted that Mori does not disclose specifics on particle size or layer thickness or particle loading. As a result of having a non-smooth surface on top of the phosphor layer, there will be areas in the laminate where little or no bond has been made to the ITO. This does three things. 1) It lessens the lamp brightness due to the introduction of trapped air pockets at the interface as an added poor quality dielectric into the active area. 2) It results in a weak bond between the layers. 3) It serves a point of egress for moisture to permeate into the active region wrecking havoc on lamp performance and life. In addition, Kardon does not teach, suggest or disclose continuous coating or drying of his chemistry or whether one can coat his phosphor layer over his barium titanate layer without scavenging/dissolving problems.

If however, one completely ignores Appelberg's construction and uses an alternate construction of applying Mori's chemistry to a Kardon/Mori process, one would continuously coat barium titanate onto the aluminum rear electrode and then coat a phosphor-bearing layer onto the ITO surface of the ITO/PET substrate. This barium titanate coated aluminum foil rear substrate would then be co-laminated to the phosphor coated ITO/PET front substrate and the auxiliary ribbon electrode. There are several problems with this possible construction. First, Mori does not disclose whether his barium titanate coating is thermosplastic or whether it would laminate to his phosphor coating under heat and pressure. Second, this results again in a failed construction because the auxiliary ribbon electrode no longer will be in contact with the ITO front electrode. As a result, there is no way to contact the ITO electrode to power the lamps.

Applicants have shown above that one of ordinary skill in the art could not and would not modify Kardon's teachings in view of Appelberg's teachings and in further view of Mori et al.'s teachings for at least the following reasons:

1. The EL lamp fabrication process and resulting EL lamp material fabricated by the Mori process is not equivalent to that in the Applicants' application. The Applicants disclose manufacturing continuous finished coils of EL lamp material in the range of 1200 – 2400 feet in length and 32.5 inches in width with other lengths and widths possible. From these coils various size lamps can be fabricated for customer orders. Mori cannot use continuous processing for small orders because it is not economically viable.
2. Mori also cannot mix different size lamps together in a single standard size roll economically because of the high yield losses.
3. Mori cannot make continuous finished coils of EL lamp material because he must stop/start his lamination process at the end of each pre-defined lamp length, resulting in further yield losses.
4. Mori suffers additional yield losses due to potential mis-alignment of the third

auxiliary ribbon electrode.

5. Any attempts to construct a lamp using Kardon's chemistry to achieve a mono-layer of phosphor will result in a failed construction as has been previously shown.
6. One cannot use the Appelberg UV-curable binder and phosphor mono-layer deposition process to coat onto a barium titanate coated aluminum foil substrate effectively because the charge will not dissipate, resulting in an under-populated layer of phosphor. And, the resulting construction will not laminate to the ITO/PET front substrate because Appelberg's second organic coating is cross-linked and not thermoplastic.
7. The above construction will also fail if Appelberg's second organic layer is not coated, because the surface of the rear substrate will have a dry phosphor powder layer which would not laminate to the ITO/PET front substrate.
8. Any possible combined construction of Kardon, Appelberg & Mori will not yield an equivalent EL lamp to that in the Applicants application for size, cost, durability or performance.

~~If one ignore's Appelberg, then one will be attempting to Modify Kardon's lamp in view of Mori to fabricate a lamp that is not equivalent to applicants invention as disclosed and claimed in applicant's invention.~~

Applicants respectfully disagree with the Examiner's assertion that one of ordinary skill in the art could modify Kardon's EL lamp in view of Mori to create continuous coils of front and rear electrodes and of their final laminate to form an elongated EL element that would be equivalent to the EL lamp and process as disclosed and claimed in applicants' application. Applicants submit the teachings of Kardon cannot be modified with the teachings of Mori to create an elongated element that is equivalent in performance and cost to the EL lamp disclosed and claimed in the present application. In Kardon, the phosphor-bearing layer is coated on the ITO surface of the front PET substrate and the barium titanate is coated on the aluminum foil

rear substrate. Both of these coating have like chemistries which are laminated together to create a unitary layer with strong bonds to both substrates. Mori teaches coating the phosphor-bearing layer onto the barium titanate layer, which is coated on the rear substrate and co-laminating this rear substrate with an ITO-coated front PET substrate and an auxiliary ribbon electrode.

Applicants have shown above that one cannot modify Kardon in view of Appelberg and in further view of Mori. If one completely ignores Appelberg and if the two substrates are coated as taught by Mori as discussed above there are problems with this method and it is contrary to the basic tenet of Kardon's teachings of strong bonds to both substrates and a unitary structure. In addition, Mori does not disclose a rewinding continuous coil of finished lamp material. Furthermore, problems occur if one uses Kardon's chemistry in the Mori construction. First, Kardon does not disclose that he can coat his phosphor layer on top of his barium titanate layer. This is generally a problem for like chemistries in which the lower layers will partially or completely dissolve in the solvent of the upper layer. Mori does not disclose how he prevents this. Second, the resulting lamination to the ITO surface of the ITO/PET front substrate in problematic as discussed above, where the non-smooth surface of the phosphor layer will not laminate completely to the ITO surface. Third. there would also be an incomplete lamination to the back side of the auxiliary ribbon electrode, allowing moisture and contamination to enter the package. Fourth, the structure would violate Kardon's basic tenet of laminating two layers of like chemistry, yielding a unitary layer with good adhesion and contamination resistance at the location of the auxiliary ribbon electrode. Fifth, Kardon's thermoplastic binder is designed to fuse to itself under heat and pressure. It is unlikely that Kardon's thermoplastic binder will bond strongly or at all to a clean ITO surface of the ITO/PET substrate.

In additon, if the two substrates are coated as taught by Kardon as discussed above, then adding the third auxiliary ribbon electrode to be co-laminated between the phosphor layer and the barium titanate layer presents problems. First, Kardon does not disclose a continuous

process for coating either of his phosphor or barium titanate layers, does not disclose a continuous drying process for either layer or ~~and~~ does not disclose a continuous process for laminating the two layers together. Second, Kardon discloses a chemistry that generally requires more dwell time in a heated stationary press than occurs in a heated nip laminator, thus requiring changes to his chemistry. Third, co-laminating the auxiliary ribbon electrode between the phosphor coated front electrode and the barium titanate rear electrode becomes essentially a useless activity, because it no longer will be in contact with the ITO front electrode. As a result, there is no way to contact the ITO electrode to power the lamps and therefore the lamp is inoperative.

If one ignores Appelberg, then any attempt to nodify Kardon's lamp in view of Mori to fabricate a lamp would result in a lamp that is not equivalent to applicants' invention as disclosed and claimed in applicants' application, in size, cost, durability or performance. And, Kardon's lamp would lack a phosphor mono-layer which is the key feature of Appelberg.

<u>Kardon-Appelberg-Kawachi</u>

In a further attempt to cure the deficiencies of the Kardon-Appelberg combination, the Examiner alleges it would be obvious to combine the teachings of Kawachi to provide Kardon with a rear electrode formed of an aluminum foil/PET film. Kawachi discloses a vacuum deposited thin film EL lamp construction on a glass substrate with a front electrode of ITO and a rear electrode of vacuum deposited aluminum. A laminate of aluminum foil and PET is disclosed as a moisture barrier for sealing this lamp from moisture. Kawachi does not indicate whether the orientation of aluminum foil and PET has one or the other facing in or facing out nor does Kawachi disclose the thickness of these films. As such Kawachi does not attach any specific function to either substrate in the laminate. The laminate plays no part in the lamp operation itself and therefore does not directly relate to **the aluminum** foil/PET laminate of

applicants' invention as disclosed and claimed. In Kawachi, the laminate is no different than a laminate of aluminum foil and PET to seal, for example, a bag of potato chips. As a moisture barrier, the PET substrate has a moderate moisture vapor transition rate (MVTR) as compared with other polymer films. Aluminum foil has a very low to negligible MVTR depending on the thickness. A thickness of greater than approximately 0.0007 of an inch is considered pin-hole free and essentially hermetic. In any case, the moisture barrier properties of this laminate is due to aluminum foil layer and not the PET, as the PET will contribute at best only a tiny fraction of the total moisture barrier properties.

In the present invention, applicants disclose the aluminum foil/PET laminate is the substrate used for the rear electrode. A coating of barium titanate is coated on the exposed aluminum foil surface and dried. This rear electrode laminate is then joined continuously in a heated nip to the front electrode laminate with the mono-layer of phosphor on the ITO coated PET front electrode laminate facing the barium titanate coating on the rear electrode laminate. In this construction, the PET on the aluminum foil/PET rear electrode laminate serves several functions not suggested, disclosed or taught by Kawachi. First, the PET functions as an aid to the continuous coating and laminating processes, because thin aluminum foil can be very difficult to process without creasing. Second, the PET acts as an electrical insulator for the rear of the resulting EL lamps produced, preventing anybody from getting an electrical shock. Third, the aluminum foil acts a moisture barrier for the rear of the lamp, to keep moisture away from the electrically active area between the front and rear electrodes. Fourthly, the PET prevents the aluminum foil rear from oxidizing. Kawachi discloses that his laminate is used as a moisture barrier but does not elaborate.

In contrast to applicants' invention as disclosed and claimed, neither Kardon nor Kawachi disclose, teach or suggest using this laminate as a rear electrode laminate or as an aid to processing the aluminum foil or as electrical insulating layer or as a layer to prevent oxidizing of

the aluminum foil. Applicants submit one skilled in the art would not be motivated to look to an EL thin film panel as taught by Kawachi for an aluminum foil/PET film rear electrode laminate as disclosed and claimed in the present application. Accordingly, applicants submit that one skilled in the art would not turn to the teachings of Kawachi to make the combination suggested by the Examiner to arrive at the rear electrode laminate as disclosed and claimed in applicants' application. Thus, the Kardon-Appelberg-Kawachi combination is deficient with respect to at least the limitation found in sub-paragraphs (a), (b) and (c) of claim 40 of the present application.

In a yet further attempt to cure the deficiencies of the Kardon, the Examiner alleges it would be obvious to combine the teachings of Appelberg to provide Kardon with a UV-curable organic binder. Appelberg discloses (column 8, lines 9 – 17): "After curing second adhesive or filler layer 84 to embed the approximate mono-layer 60 in the flexible first and second layers 34,84 functioning as a dielectric matrix, the carrier strip 10 can be moved through a metallic deposition apparatus 110 for vapor deposition of a thin reflective metallic conductive layer 112 on to surface 84a of the cured second dielectric layer 84. A typical metallic layer 112 would comprise vapor deposited aluminum with a thickness of about 300 Angstroms." More details about the vapor deposited aluminum rear electrode are disclosed in lines 18 – 43. Appelberg does NOT disclose, teach or suggest the lamination of front and rear electrodes, in fact Appelberg does not even have a rear electrode substrate and therefore cannot provide an EL lamp material that is laminated from a front electrode laminate and a rear electrode laminate.

Applicants respectfully disagree with the Examiner's assertion that the claim limitation of the phosphor layer being formed prior to the lamination of the of the front and rear electrodes as disclosed and claimed in the applicants' application is drawn to a process of manufacturing which is incidental to the claimed apparatus. The examiner states that it is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the

prior art, the subject product-by-process claim limitation is not afforded patentable weight.

Applicants have shown above the novelty and unobvious difference between the claimed product and the prior art by removing the second organic UV-curable layer modifying the first organic UV-curable layer as disclosed and taught in Appelberg. Applicants have discussed above the novelty of the partial curing and calendering the phosphor mono-layer and then fully curing the UV-curable organic phosphor mono-layer and the need to laminate this continuous front electrode laminate to a continuous rear electrode laminate of barium titanate coated aluminum foil polyester to create an EL lamp that yields more light output from the front substrate. The results achieved by applicants are not obvious nor is an EL lamp material of the present invention suggested, disclosed or taught by the prior art. Accordingly, it is essential and crucial to the present invention to form the UV-curable organic binder phosphor particulate layer prior to the laminating to achieve the improved light output in addition to the other benefits described in the application.

Regarding claim 41, applicants respectfully disagree with the Examiner's assertion and conclusion that Appelberg teaches using a UV-curable organic binder in order to quickly cure the adhesive and it would be obvious to modify the teachings of Kardon with a UV curable organic binder layer in order to expedite production, as taught by Appelberg. Applicants have shown above that one cannot modify Kardon's EL lamp construction with a UV-curable organic binder. Furthermore, Appelberg teaches one reason to use UV curing is that the substrate is moving up to 20 feet per minute and one needs a fast cure method to cure the organic layer in a practical application. For instance, Kardon discloses drying at 120° C, but does not disclose a drying time. Looking at his preferred solvent, Dowanol®, it has a relatively high boiling point and would take some dwell time in an oven to dry. If it took 10 minutes or longer to dry, remembering that one cannot use a higher oven temperature because of the polymer substrate, Kardon would require a 200 foot or longer continuous oven to dry. Such an oven is not

suggested or disclosed by Kardon and further is impractical and improbable. Applicants submit it is unlikely one skilled in the art would be motivated to modify the teachings of Kardon to use the UV-curable organic binder taught by Appeberg for at least the foregoing reasons.

The Examiner also asserts that the phrase "continuous coil" can be anything having any length of uninterrupted structure that is flexible enough to be coiled, could be considered a "continuous coil". We respectfully disagree. Applicants have defined the term continuous coil in the application as front and rear substrates that can be in the order of 1000 to 2000 feet in length as typical and that longer lengths will be possible as processes improve. These continuous coils result in finished coils of EL lamp material of the same lengths coiled on a rewind roll, which can then be available to cut up into individual customer lamps of various sizes and lengths. Some of these finished lamp lengths can be hundreds of feet long. Clearly none of the references cited by the Examiner discloses or infers this. In addition, any attempts to do continuous processing require coiled substrates of substantially long lengths to be physically and economically viable. In many industrial sites, the 1000 to 2000 foot coils cited in applicants' disclosure are already considered short and are bare minimum lengths to be physically and economically viable, due to set-up times, coating thickness adjustments, clean-up between coils, handling coils, samples needed for QC, etc. Therefore, continuous coils as disclosed and defined in the application, refers to these lengths as minimum lengths in order to be suitable for web-to-web coating processing.

Kardon-Appelberg-Kawachi-Mori-Kobayaschi

In attempting to cure the deficiencies of the Kardon-Appelberg-Kawachi-Mori combination, the Examiner combines the teachings of Kobayashi to reject claims 42, 43, 45 and 46. Claims 42, 43, 45 and 46 are dependent directly or indirectly on claims 40 and 41 which have been shown above to be patently and technically distinguishable over the prior art

combinations asserted by the Examiner. It is submitted that claims 42, 43, 45 and 46 are likewise patently and technically distinguishable for similar reasons as applied to claims 40 and 41 from which they depend and for additional limitations clearly set forth therein.

With respect to claim 42, Applicants respectfully disagree with the Examiner assertion that Appelberg teaches an EL lamp material having a rear electrode that is cut to a predetermined depth through aluminum foil polyester film to produce a split-electrode EL lamp having at least two electrically isolated rear electrode areas. As discussed above, Appelberg does not teach or disclose a rear electrode laminate of aluminum foil polyester. Appelberg only discloses a vapor deposited aluminum rear electrode (column 2, lines 54 – 60; column 3, lines 49 – 50; column 8, lines 12 – 43) and splitting the rear electrode to form a pair of side-by-side electrodes (column 3, lines 51, 60; column 8, lines 26 - 27). Applicants have previously shown that an aluminum foil rear electrode is vastly superior and functionally and technically different from a vapor deposited aluminum rear electrode. Applicants EL lamp material as disclosed and claimed teaches having a rear electrode that is cut to a predetermined depth through the aluminum foil polyester film to produce a split-electrode EL lamp having at least two electrically isolated rear electrode areas.

The Examiner asserts that Appelberg lacks disclosure of a barium titanate layer being partially grooved to produce a split-electrode EL lamp because Appelberg lacks disclosure of a barium titanate layer. The Examiner states that Kardon, Appelberg, Kawachi and Mori in combination lack disclosure of a rear electrode cut to create a split-electrode EL lamp. However, the Examiner argues that Kobayashi teaches a rear electrode cut a predetermined depth through both the aluminum foil and barium titanate layer (column 13, lines 12 – 16, 25) to produce a split-electrode EL lamp having at least two electrically isolated rear electrode areas (Figure 1, elements 4,5) with uniform light distribution (Column 13, lines 50 – 52). Applicants respectfully disagree and again set forth by incorporation the reasoning in applicants' response Paper No. 6.

Applicants further submit the Examiner,s reasoning is in error. The Examiner's reference to Kobayashi column 13, lines 12-16 and line 25, do not disclose: a predetermined depth; aluminum foil; or a barium titanate layer. The two current limiting layers disclosed are carbon black (column 12, line 63) and a barium titanate based semiconductor which is formed by adding a small amount of yttrium or cerium (column 11, lines 35 –39) to obtain conductivity. Applicants submit that an insulating barium titanate insulating layer is fundamentally and technically different than a partially conducting layer as discussed herein below.

Applicants further submit the Examiner is in error in asserting that Kobayashi teaches producing a split-electrode EL lamp having at least two electrically isolated rear electrodes (Figure 1, elements 4,5) with uniform light distribution (column 13, lines 50 – 52) for the following reasons. Figure 1 is a DC EL dot-matrix display with many row and column electrodes, typically 640 x 400 dots or 1024 x 800 dots (column 3, lines 2 – 4) and elements 4 and 5 refer to the current limiting layer and vaporized aluminum rear electrode. On looking at Figure 1 in conjunction with the text, one observes that it is a x – y matrix display device with multiple rows of the rear electrode displayed. <u>It is not a split-electrode AC powered EL lamp because the structure is wrong.</u> A split-electrode EL lamp has only two electrodes and the layer under the rear conductor is an insulating layer, not a conducting layer. AC voltage is applied to the two rear electrodes only of a split-electrode EL lamp which acts as a voltage divider and capacitively couples one half of the lamp to the other half.

Kobayashi discloses a DC powered EL display device (column 1) with a designated anode layer and designated cathode layer (column 6, lines 34 – 36), that has multiple row and column electrodes, and that uses a time-division driving method sequentially scanning lines along the row direction (column 2, lines 14 –15) to power the individual pixel elements. As the number of dots or pixels increase, the duty ratio is decreased thus reducing the brightness of the device (column 3, lines 4-7). Further, DC power is applied from the front electrode to the rear

electrode, which further distinguishes Kobayashi's device from the EL lamp of the present invention as disclosed and claimed.

Furthermore, applicants have previously shown that scoring with a diamond scribe on the aluminum foil rear electrode will not work due to the shredding problem. In addition, the PET film, which is pre-laminated to the aluminum foil before the coating of the barium titanate, will prevent the diamond scribe from scoring the rear layer at all and therefore a diamond scribe could not be used because it is inoperative in the use as suggested by the Examiner.

In addition, Kobayashi teaches that the scoring with the diamond scribe must go completely through his vaporized aluminum rear electrode and the current limiting layer, or the adjacent rows will not be electrically isolated due to the conductivity of the current limiting layer and cause the resulting display to malfunction. In contrast, in applicants' invention the scribing operation is described as going partially through the barium titanate layer as a process consideration. In actuality, the barium titanate layer does not need to be scribed at all for the lamp to function properly. It is only done to assist in scribing operation of the aluminum foil polyester rear substrate to insure reliable scribing resulting and high yields.

Applicants disagree with the Examiner's conclusion that Kobayashi partially conductive layer containing barium titanate is no different than the insulating barium titanate layer of the EL lamp material of the present invention. The Examiner wrongly equates a partially conductive layer is synonymous with an insulating layer. Insulators are fundamentally different than conductors. Kobayashi discloses a current limiting layer that is conductive by design (Column 4, lines 10-12, 18-19). Applicants' application discloses a barium titanate layer which is insulating by design. The layers are in different types of devices and serve fundamentally different functions. One could not exchange the conducting layer in Kobayachi and the insulating barium titanate layer of applicants' invention because neither resulting device would function properly

or function at all.

If we assume, for a moment, that the Examiners assertion that a partially conductive layer is synonymous with an insulating layer, it leads to logical absurdity. Since no conductors are perfect, they all have some inherent residual resistance or non-conductive characteristics. Thus, by the above assertion all conductors are partial conductors and therefore equivalent to insulators. Conversely, since no insulators are perfect insulators they have some inherent residual conductivity or non-insulating characteristics. Again, by the above assertion the insulators are partial conductors and therefore equivalent to conductors. Obviously, neither of the above statements is correct with regard to insulators and conductors as the terms are used in common practice. Since there are no perfect conductors or insulators, the difference between them is defined by the orders of magnitude in difference in conductivity between them. In common usage, an insulator is used to prevent a measurable flow of electricity. A conductor is used to facilitate the flow of electricity and may do it with or without resistance. For example, a capacitor is an example of a common device that utilizes an insulator. A resistor is an example of a common partially conducting device. One could not use these two devices interchangeably in a circuit and achieve equivalent results. The reason the barium titanate layer of applicants' invention could not be used in Kobayashi's device is, because as an insulator it would block all flow of direct current in the Kobayashi device and render it inoperative. Therefore, applicants submit the two layers are fundamentally different in composition and fundamentally different in resulting function one skilled in the art would not use the Kobayaschi layer in for the barium titanate layer in applicants' invention as disclosed and claimed.

Applicants also disagree with the Examiner's assertion that the thickness of the barium titanate layer, the difference in the driving voltage of Kobayashi's device versus applicants' invention as disclosed and claimed are not limitations of the claims and cannot distinguish over prior art. The devices and the disclosed driving voltages are interrelated. Koabayashi's EL

display and the EL lamp of the present invention are different devices, used for very different applications and are designed to operate using different voltages. Kobayashi's device is designed to operate using a time-division driving method sequentially scanning lines along the row direction (column 2, lines 14 –15) to power the individual pixel elements and basically a DC device. The EL lamp of the present invention is an AC device that is a split-electrode EL lamp having only two electrodes, where an AC voltage is applied to the two rear electrodes which act as a voltage divider and capacitively couple one half of the lamp to the other half. If one tried to exchange driving schemes, the devices would perform very poorly if at all.

The thickness of the barium titanate layer is very important to the functioning of the EL lamp of the present invention because it is an insulator in the EL lamp which is an AC device, the thickness of the barium titanate layer directly impacts the brightness of the lamp. Applicants' EL lamp is basically a capacitor with top and bottom electrodes. The capacitance value, which directly relates to brightness, is a function of three things: 1. the area of the electrodes; 2. the dielectric constant of the insulator between the electrodes; 3 the gap between the electrodes. Assuming lamps of equal area, an increase in the thickness of the barium titanate layer increases the gap between the electrodes, thus lowering the brightness of the lamp. A decrease in the thickness of the barium titanate layer will cause an incomplete lamination with trapped air between the phosphor layer and the barium titanate layer, also causing a decrease in brightness. Applicants barium titanate layer differs from previously disclosed barium titanate layers in that there is a minimum thickness necessary to achieve a good quality lamination.

Kobayaschi is further deficient in that Kobayaschi lacks a rear electrode laminate comprising an aluminum foil polyester film and a barium titanate layer on the aluminum foil surface as recited in claim 40 sub-paragraph (b). Kobayashi discloses an x – y dot matrix display where the rear electrodes are patterned into stripes in e.g., the Y direction on the X-Y plane by using a diamond scribe (column 9, lines 1 – 3) which is fabricated on a glass substrate (column

8, lines 42- 43). This device can only be made on a glass substrate because of the rigors of depositing semiconducting layers onto it using physical vapor deposition equipment, such as electron beam vapor deposition which include high temperatures (column 8, lines 57 – 61). As a result it can only be made in relatively small to moderate sizes due to the limitations of web coating and limitations of continuous glass substrates. Furthermore, the utilization of a diamond scribe can only be done on glass or other very hard substrate. Kobayashi teaches that a large device for his application is a 1024 x 800 dots (column 3, lines 2 – 4). Therefore, his structure cannot be made into a large-scale EL device, such as 12,500 square inches, as described in applicants' specification and Kobayaschi does not suggest, disclose or teach the large scale EL lamp material of applicants' invention as disclosed and claimed.

In contrast to Kobayaschi, applicants' EL lamp material is fabricated on a PET substrate, and can be fabricated into large scale lamps that exceed 12,500 square inches due in part to the flexible PET substrate. One cannot use a diamond stylus to scribe the rear electrode because of previously discussed problem with aluminum foil in the previous response and the fact the diamond scribe could damage other layers in the lamp including the PET substrate itself.

In further contrast to applicants' invention, Kobayashi discloses that as the displays become larger for the realm of displays (more dots), the brightness decreases (column 3, lines 1 – 7) whereas the brightness of the EL lamp of applicants' invention remains the same brightness regardless of the size at the same drive voltage.

Furthermore, Kobayashi discloses that a typical hybrid EL device requires 100 mA/cm^2 for a 640 x 400 dot device (column 9, lines 13 – 16), and that his improved device requires about 1/3 of that or about 33 mA/ cm^2 (column 9, lines 17 – 29). If there were no other limitations for making a device using Kobayashi's construction, it would require greater that 2600 Amperes of current to power it with an area equivalent to applicants' EL lamp of 12,500 square inches.

Kobayaschi's electrical current requirement clearly exceeds any rational or useable value and thus one must conclude that one cannot fabricate or power an equivalent device to the EL lamp of the present invention as disclosed and claimed by utilizing the teaching of Kobayashi.

Kobayaschi is further deficient in that the vapor deposited aluminum rear electrode as disclosed by Kobayashi could not carry any significant current to support a large area display. Additionally, the scribing operation to produce a split-electrode EL lamp construction as disclosed and claimed in applicants' application could be hundreds of feet long. Kobayashi 's construction cannot be made that large and thus one cannot use Kobayashi to fabricate lamps with this feature.

With respect to claim 43, applicants respectfully disagree with the Examiner's assertion that Kobayashi teaches the rear electrode being cut to produce a split-electrode EL lamp having at least two electrically isolated rear electrodes of equal area to emit light of equal brightness (column 13, lines 50 – 52). Kobayashi does not disclose that the rear electrode is cut to produce a split-electrode EL lamp having at least two electrically isolated rear electrodes of equal area to emit equal brightness for at least the above reasoning and the reasoning set forth in applicants' response in Paper No. 6 which reasoning is incorporated by reference herein.

With respect to claim 45, applicants respectfully disagree with the Examiner's assertion that Kobayashi teaches multiple cuts through the rear electrode (Figure 1, elements 4,5) to produce a split-electrode EL lamp having multiple pairs of electrically isolated rear electrode areas, wherein light is emitted in the area of each pair of multiple pairs (since all the electrode areas formed by the cuts can be grouped into pairs) to produce special effect lighting, where the uniform lighting effect is interpreted as being a special effect (column 13, lines 50 – 52). Applicants have previously shown in its response Paper No 6 the error of the Examiner's conclusion and incorporate by reference its prior response. In addition, applicants submit that

Kobayashi does not suggest, teach or disclose a split-electrode EL lamp having multiple pairs of electrically isolated rear electrode areas, wherein light is emitted in the area of each pair of multiple pairs for similar reasoning as set forth above.

Although uniform lighting may be interpreted as a special effect, it is not useful. Special effects include selecting an individual electrode segment or segments to be powered by pairing with one or more common electrode segments to illuminate when a predefined specific condition occurs. Kobayashi defines fabricating and powering a full display, where all dots are active and illuminate based on the text or graphic images, which are transient and not constant.

In conclusion, both of the above Examiner arguments are based on the Examiner's assertion that the Kobayashi construction can be scribed and powered to be a split-electrode EL lamp. However, one would not view Kobayashi's construction as a candidate for a split-electrode AC powered EL lamp because the structure is wrong. A standard split electrode lamp has only two electrodes and the layer under the rear conductor is an insulating layer, not a conducting layer. AC voltage is applied to the two rear electrodes only of a split electrode EL lamp which act as a voltage divider and capacitively couples one half of the lamp to the other. Kobayashi's device is powered from the front ITO electrodes to the rear vapor deposited aluminum electrodes. Therefore, one would not look to Kobayashi to make a split-electrode EL lamp having multiple pairs of electrically isolated rear electrode areas wherein light is emitted in the area of each pair of multiple pairs to produce special effect lighting.

With respect to claim 46, applicants respectfully disagree with the Examiner's assertion that Kobayshi teaches every electrically isolated rear electrode area in conjunction with an electrical connector in contact with the aluminum foil (Figure 1, element 5) for powering the EL lamp and repeats and incorporates by reference its reasoning as set forth in the response Paper No.5. Furthermore, Kobahashi teaches that the row and column electrodes must protrude out

beyond the edges of the active display area, where contact is made to the electrodes. Displays fabricated using Kobayashi must have both top and bottom electrodes exposed after fabrication for the purpose of making connections to the display. One cannot cut up a Kobayashi device into smaller displays and then make connection to the electrodes, because they would be covered and not accessible. In contrast, the EL lamp material of applicants' invention as disclosed and claimed can be made into smaller lamps and connection can be made to the electrodes by piercing the connector through the entire lamp body, and clearing the short to the ITO electrode upon first powering. The same process cannot be done with a Kobayashi device, therefore one would not look to Kobayashi for making connections to the lamp of the current disclosure.

In addition to the above, the various applied prior art references offer no teaching which would prompt the artisan of ordinary skill to make the combinations/modifications proposed by the Examiner. In fact, it is only when the Examiner looks to applicants' own disclosure that he can allege obviousness by choosing bits and pieces of the prior art references and then combining these bits and pieces together based on alleged obviousness. Without a teaching (other than applicants' own teaching) to prompt the combinations/modifications, the rejections are merely improper hindsight reconstruction of applicants' own invention using applicants' own disclosure. The Court of Appeals for the Federal Circuit has steadfastly criticized such modification. "The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). See also, e.g., In re Laskowski, 871 F.2d 115, 10 USPQ 2d 1397 (Fed. Cir. 1989); Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); In re Grabiak, 769 F.2d 729, 731, 226 USPQ 870, 872 (Fed. Cir. 1985); In re Sernaker, 701 F.2d 989, 994, 217 USPQ 1, 5 (Fed. Cir. 1983).

Accordingly, it is submitted that the present invention as claimed is readily distinguishable from the prior art references for the reasons indicated. Applicants' invention is not disclosed by any of the prior art and there is no fair basis for alleging that applicants' invention is obvious in regard to such prior art. If the invention was obvious, it would have been adopted before in view of its advantages.

In sum, it is submitted that the present invention as claimed is readily distinguishable from the applied references for the reasons indicated. Applicants' invention is not disclosed by the applied references and there is no fair basis for alleging that applicants' invention is obvious in regard to them. If the invention was obvious, it would have been adopted before in view of its advantages.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that all the claims are allowable and early favorable action is earnestly solicited. The Examiner is invited to call applicants' attorney if any questions remain following review of this response.

Respectfully submitted,

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